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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,141	04/01/2004	Heung-Lyul Cho	0630-1979P	6546
2292	7590	01/24/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			SCHECHTER, ANDREW M	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

EK

## Office Action Summary

Application No.

10/814,141

Applicant(s)

CHO ET AL.

Examiner

Andrew Schechter

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 5-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Specification***

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. The specification at paragraph [0046] includes the phrase "This mask is the only mask used in the invention. [PLEASE VERIFY. THERE APPEARS TO BE TWO MASKS 306 AND 311.]" The examiner suggests that this line should be clarified and the editorial comment deleted.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Holmberg et al.*, U.S. Patent No. 6,160,270 in view of *Yudasaka et al.*, U.S. Patent No. 5,989,945.

*Holmberg* discloses [see Fig. 6, for instance] a fabrication method of an LCD, comprising forming a gate line [132, etc.] on a substrate [122] by applying a gate photoresist pattern [130]; sequentially forming a gate insulating layer [138], a semiconductor layer [140], and a high-concentrated N+ layer [142] over the gate line;

forming an active region over the high-concentrated N<sup>+</sup> layer by applying an active photoresist pattern [144]; forming a conductive layer [152, 154] over the active region; depositing a photoresist layer [150] over the conductive layer; applying a mask over the photoresist layer, performing a lithography process, and thereby forming a source/drain electrode [152, 154] [Fig. 6J]; forming a passivation layer [160] over the source/drain electrode; forming a contact hole [164] over the passivation layer by applying a contact hole photoresist pattern [162]; and forming a pixel electrode [168] on the passivation layer by depositing a pixel electrode photoresist pattern [170].

It might be argued that *Holmberg* does not disclose the step of “applying a mask”, since it does not use the term “mask” and merely discloses that the photoresist layer is “patterned” [col. 10, lines 56ff.]. (One of ordinary skill in the art would presume a mask of some kind is used, but this is perhaps not made explicit in the reference.) The examiner takes official notice that applying a mask of some kind to pattern the photoresist layer in question is well-known in the art, and it would have been obvious to one of ordinary skill in the art at the time of the invention to do so in this case, motivated by the conventionality of doing so, with advantages of high patterning precision and reliability.

*Holmberg* does not disclose that the other photoresist patterns are formed by printing. *Yudasaka* does disclose [col. 19, lines 47ff.] forming such photoresist patterns by ink jet printing, and teaches that using doing “increases utilization of the solution and permits forming a patterned coating film ...[and] drastically reduces initial investment and production cost of a liquid crystal display device” [abstract]. It would therefore have

been obvious to one of ordinary skill in the art at the time of the invention to use ink jet printing to form the gate photoresist pattern, the active photoresist pattern, the contact hole photoresist pattern, and the pixel electrode photoresist pattern. Claim 1 is therefore unpatentable.

The mask includes a channel region pattern [see Fig. 6J], so claim 2 is also unpatentable. The printing is ink jet printing, so claim 3 is also unpatentable. The step of forming the source/drain electrode comprises defining an active layer by sequentially removing the N<sup>+</sup> layer and the semiconductor layer by using the active photoresist pattern formed by printing as a mask [Fig. 6F]; removing the active photoresist pattern [Fig. 6G]; sequentially forming a conductive layer [152] and a photoresist layer [150] over the active layer [Fig. 6J]; exposing the photoresist layer, performing a development process, and thereby removing the photoresist layer above a channel region by using the mask including the channel region pattern [Fig. 6J – see discussion of “applying a mask” above]; and sequentially removing the conductive layer and the N<sup>+</sup> layer above the channel region [Figs. 6J-6L]. Claim 4 is therefore unpatentable as well.

#### ***Election/Restrictions***

5. Applicant's election with traverse of Group IA (claims 1-4) in the reply filed on 6 January 2006 is acknowledged. The traversal is on the ground(s) that it is not a serious burden on the examiner to examine all the claims in a single application. This is not found persuasive because Groups I and II relate to very different structures and methods and require different fields of search, while Groups IA and IB are different

species of the invention which in the opinion of the examiner would pose a serious burden to examine in a single application. The requirement is still deemed proper and is therefore made FINAL.

6. Claims 5-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Group, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 6 January 2006.

### ***Conclusion***

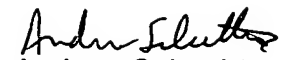
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Andrew Schechter  
Primary Examiner  
Technology Center 2800  
18 January 2006